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EXAMINER	
AMADIZ, RODNEY	

ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 10/653,559	Applicant(s) RYKOWSKI ET AL.	
	Examiner Rodney Amadiz	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 22 June 2006.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-4,7-13,16-26 and 29 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-4,7-13,16-26 and 29 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 19 December 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claim 1 recites the limitation "the measured tristimulus values" in step “f”. There is insufficient antecedent basis for this limitation in the claim. In the rejection below, the Examiner will treat “the measured tristimulus values” as if it is referring to the “tristimulus values” stated in step “d” of claim 1.

2. Claim 1 recites the limitation "the target tristimulus values" in step ”f”. There is insufficient antecedent basis for this limitation in the claim. In the rejection below, the Examiner will treat “the target tristimulus values” as if it is referring to the “tristimulus values” stated in step “e” of claim 1.

3. Claim 2 recites the limitation “the visual display sign image” in step “i”. There is insufficient antecedent basis for this limitation in the claim. In the rejection below, the Examiner will treat “the visual display sign image” as if it is referring to “the visual display module” stated in step “h” of claim 2.

4. Claim 10 recites the limitation “each measured subpixel” in step “f”. There is insufficient antecedent basis for this limitation in the claim. In the rejection below, the Examiner will treat “each measured subpixel” as if it is referring to the stored chromaticity value and luminance value for each subpixel stated in step “d” of claim 10.

5. Claim 22 recites the limitation "the target tristimulus values" in line 13. There is insufficient antecedent basis for this limitation in the claim. In the rejection below, the Examiner will treat “the target tristimulus values” as if it is referring to the “tristimulus values” stated in line 10 of claim 22.

Claim Objections

6. Claims 1, 10 and 22 are objected to because of the following informalities: All claims refer to "tristimulus values" twice. Applicant should accurately label the trimistulus values separately in order to distinguish one from the other. Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 3, 4, 10, 12, 13, 16 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al. (U.S. 6,243,059) in view of Cottone et al. (U.S. Patent 6,677,958).

As to **Claim 1**, Greene et al. teaches a method of calibrating a visual display, the method comprising: (a) analyzing a visual display module, the module comprising an array of pixels and corresponding subpixels ***(Col. 17, lines 12-39 and Fig. 8, Reference Number 53)***; (b) locating and registering multiple subpixels of the visual display module ***(Col. 17, lines 25-29 and Col. 16, lines 10-13-note that storing data for each subpixel requires locating and registering the subpixels)***; (c) determining a chromaticity value and a luminance value for each registered subpixel ***(Col. 16, lines***

10-13). Greene et al. also teaches a target value ***(Col. 16, lines 6-13).*** Greene et al. also teaches (f) calculating correction factors for each registered subpixel based on a difference between the measured chromaticity and luminance values and the target chromaticity and luminance values ***(Col. 15, lines 40-43 and Col. 16, lines 32-42)***; and (g) sending the correction factors to the visual display module ***(Col. 16, lines 35-43)***.

Greene et al. however, does not teach converting the chromaticity and luminance value for each registered subpixel value to tristimulus value in step (d) nor does Greene et al. teach converting a target chromaticity value and a target luminance value for a given color to tristimulus values in step (e). Examiner cites Cottone et al. to teach that the conversion between the CIE chromaticity coordinates (x,y) and luminance value Y into the CIE tristimulus value (XYZ) is well known in the art ***(Cottone—Col. 5, lines 9-15 and 50-52)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to convert the chromaticity and luminance values into tristimulus values as taught by Cottone et al. in the method for calibrating a visual display taught by Greene et al. so as to increase the precision of the color/brightness values. Furthermore it is well known that color can be represented in different formats and any known method of defining color/brightness will perform equally well at helping calibrate a display.

As to **Claim 10**, Greene et al. teaches a method for calibrating a visual display, the method comprising: (a) analyzing a portion of a visual display module, the portion comprising an array of pixels and corresponding subpixels ***(Col. 17, lines 12-39 and Fig. 8, Reference Number 53)***; (b) locating and registering multiple subpixels within the

array ***(Col. 17, lines 25-29 and Col. 16, lines 10-13-note that storing data for each subpixel requires locating and registering the subpixels)*** (c) determining a chromaticity value and a luminance value for each registered subpixel within the array ***(Col. 16, lines 10-13)***; (d) storing the chromaticity value and luminance value for each subpixel ***(Col. 16, lines 10-13)***; (e) repeating steps (a) to (d) for each portion of the visual display module until all portions of the visual display module have been analyzed ***(Col. 17, lines 12-39-note that the colorimeter does a scanning motion to collect the data)***. Greene et al. also teaches a target value ***(Col. 16, lines 6-13).*** Greene et al. also teaches (h) calculating correction factors for each registered subpixel based on a difference between the measured chromaticity and luminance values and the target chromaticity and luminance values ***(Col. 15, lines 40-43 and Col. 16, lines 32-42)***; (i) applying the correction factors to the stored chromaticity and luminance values for each subpixel ***(Col. 16, lines 35-57)***; and (g) calibrating the visual display module with the corrected subpixel values ***(Col. 16, lines 35-43)***.

Greene et al. however, does not teach converting the chromaticity and luminance value for each measured subpixel value to tristimulus value in step (f) nor does Greene et al. teach converting a target chromaticity value and a target luminance value for a given color to tristimulus values in step (g). Examiner cites Cottone et al. to teach that the conversion between the CIE chromaticity coordinates (x,y) and luminance value Y into the CIE tristimulus value (XYZ) is well known in the art ***(Cottone—Col. 5, lines 9-15 and 50-52)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to convert the chromaticity and luminance values into

tristimulus values as taught by Cottone et al. in the method for calibrating a visual display taught by Greene et al. so as to increase the precision of the color/brightness values. Furthermore it is well known that color can be represented in different formats and any known method of defining color/brightness will perform equally well at helping calibrate a display.

As to **Claim 29**, Greene et al. teaches calibrating the module with the adjusted subpixel values ***(Col. 16, lines 35-43)***.

As to **Claims 4 and 16**, Greene et al. teaches wherein the process in step (c) for determining the chromaticity value and luminance value for each subpixel includes the use of an imaging colorimeter ***(Greene et al.—Fig. 10, Reference Number 35)***.

As to **Claim 13**, Greene et al. teaches the pixels are pixels of a liquid crystal display (LCD) **(Fig. 8, Reference Number 53)**.

As to **Claims 3 and 12**, Greene et al. does not teach the picture elements to be light-emitting diodes. Examiner cites Cottone et al. to teach pixels in a display unit comprising of LED's ***(Cottone et al.—Col. 1, lines 15-17)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the light emitting diodes as taught by Cottone et al. in the display device taught by Greene et al. because of their long term reliability and low power consumption.

9. Claims 2 and 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al. and Cottone et al. as applied to claims 1, 3, 4, 10, 12, 13, 16 and 29 above, and further in view of Mendelson et al. (U.S. Patent 6,559,826).

As to **Claim 2 and 11**, Greene et al. as modified by Cottone et al. does not teach (h,k) setting the visual display module image to the color red; (i,l) repeating steps (a) to (f,j); and (l,m) repeating steps (h,k) and (i,l) with the visual display module image set to green, blue, and white. Examiner cites Mendelson et al. to teach setting the visual display module image to the color red, green, blue and white and calibrating the display after each color is set ***(Mendelson—Col. 15, lines 24-52).*** At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to set the visual display module to each primary color including white and provide calibration after each color is set in the method taught by the modified invention of Greene et al. and Cottone in order to provide accurate calibration for the entire display.

10. Claims 8, 9, 20, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al. and Cottone et al. as applied to claims 1, 3, 4, 10, 12, 13, 16 and 29 above, and further in view of Ott (USPGPUB 2004/0066515).

As to **Claim 22**, Greene et al. teaches an apparatus for analyzing and calibrating a visual display, comprising: means for capturing an image from a portion of the visual display module ***(Col. 17, lines 12-39 and Fig. 8, Reference Number 53)***; means for determining a chromaticity and a luminance value for a plurality of subpixels from the captured image ***(Col. 16, lines 10-13)***; Greene et al. also teaches a target value ***(Col.***

16, lines 6-13); and means for adjusting chromaticity and luminance values for each subpixel to correspond with the target chromaticity and luminance values ***(Col. 16, lines 35-57)***.

Greene et al. however, does not teach converting the chromaticity and luminance value for each of the subpixels to tristimulus values nor does Greene et al. teach converting a target chromaticity value and a target luminance value for a given color to tristimulus values. Examiner cites Cottone et al. to teach that the conversion between the CIE chromaticity coordinates (x,y) and luminance value Y into the CIE tristimulus value (XYZ) is well known in the art ***(Cottone—Col. 5, lines 9-15 and 50-52)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to convert the chromaticity and luminance values into tristimulus values as taught by Cottone et al. in the method for calibrating a visual display taught by Greene et al. so as to increase the precision of the color/brightness values. Furthermore, it is well known that color can be represented in different formats and any known method of defining color/brightness will perform equally well at helping calibrate a display.

Finally, Greene et al. as modified by Cottone et al. do not teach the visual display module positioned within a testing station. Greene et al. as modified by Cottone et al. however, do not limit where the method takes place. Examiner cites Ott to teach a measuring device ***(Fig. 1, 1)*** used to determine pixel-by-pixel measurements. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of a test station as taught by Ott in the calibration of the

visual display taught by Greene et al. as modified by Cottone et al. in order to obtain precise measurements.

As to **Claims 8, 9, 20 and 21**, Greene et al. as modified by Cottone et al. do not teach steps (a)-(g/l) taking place within a test station or darkroom. Greene et al. as modified by Cottone et al. however, do not limit where the method takes place. Examiner cites Ott to teach a measuring device ***(Fig. 1, 1)*** used to determine pixel-by-pixel measurements. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of a test station as taught by Ott in the calibration of the visual display taught by Greene et al. as modified by Cottone et al. in order to obtain precise measurements. Furthermore it would have been obvious to a person of ordinary skill in the art to calibrate a module at a test station, darkroom or any environment with ideal conditions that would produce the best test results.

11. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al., Cottone et al. and Ott as applied to claims 8, 9, 20, 21 and 22 above, and in further view of Hsu (USPGPUB 2004/0179208).

As to **Claims 23 and 24**, Greene et al. teaches an optical measuring device ***(Fig. 10, Reference Number 35)*** for capturing the image from a portion of the visual display; however, Greene et al. as modified by Cottone et al. and Ott; however, does not teach the image-capturing device comprising a CCD (or CMOS) digital camera and lens. Examiner cites Hsu to teach an optical sensor ***(Fig. 2, Reference Numbers 3 and 4)***

composed of a CCD (or CMOS) digital camera ***(Page 1, ¶ 11)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the CCD or CMOS digital camera as taught by Hsu in the modified capturing means taught by Greene et al. and Cottone et al. and Ott in order to accurately produce high-quality images.

12. Claims 7, 17, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al. and Cottone et al. as applied to claims 1, 3, 4, 10, 12, 13, 16 and 29 above, and further in view of Watanabe et al. (U.S. Patent 4,825,201).

As to **Claims 7 and 19**, Greene et al. as modified by Cottone et al. fails to teach the process in step (g/i) for sending the correction factors to the visual display module comprises uploading the corrected subpixel values to firmware and/or software controlling the visual display module. Examiner cites Watanabe et al. to teach sending the correction factors to the visual display module comprising uploading the corrected subpixel values to firmware and/or software controlling the visual display module ***(Watanabe et al.—Fig. 6, ROM3 and Col. 6, lines 11-21)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate uploading the corrected subpixel values to firmware and/or software controlling the visual display module as taught by Watanabe et al. in the visual display device taught by Greene et al. and Cottone et al. in order to make the system more modifiable.

As for **Claim 17**, Greene et al. as modified by Cottone et al. fails to teach storing the chromaticity and luminance value for each subpixel in a database. Examiner cites Watanabe to teach storing pixel data in a database ***(Fig. 3, E^2 Prom, Col. 4, lines 48-49)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of a database as taught by Watanabe et al. in the visual display device taught by Greene et al. and Cottone et al. so that the organized data may be easily accessed, managed and updated.

As to **Claim 18**, Greene et al. teaches calculating correction factors for each subpixel using a computer ***(Col. 13, lines 12-18)***. Greene et al. as modified by Cottone et al., however, fails to teach calculating correction factors for each subpixel using software. Examiner cites Watanabe to teach calculating correction factors using software ***(Fig. 6, note ROM3)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of software to calculate correction factors as taught by Watanabe et al. in the visual display device taught by Greene et al. and Cottone et al. so that the system may be more modifiable.

13. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greene et al., Cottone et al. and Ott as applied to claims 8, 9, 20, 21 and 22 above, and further in view of Watanabe et al. (U.S. Patent 4,825,201).

As to **Claim 25**, Greene et al. as modified by Cottone et al. and Ott have failed to teach software loaded in an interface, the interface being operably coupled to both the capturing means and the visual display module. Examiner cites Watanabe to teach

software loaded in an interface, the interface being operably coupled to both the capturing means and the visual display module ***(Fig. 6, note ROM3 and Figure 5, Correction-value Determining Device and Controller 8) coupled to both the capturing means (Optical Measuring Device 12) and the Visual Display (Display Unit 1))***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of software to calculate correction factors as taught by Watanabe et al. in the visual display device taught by Greene et al., Cottone et al. and Ott so that the system may be more modifiable.

Furthermore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to couple the interface to both the capturing means and visual display module as taught by Watanabe in the visual display device taught by Greene et al., Cottone et al. and Ott in order to quickly communicate data from one device to the other.

As to **Claim 26**, Greene et al. as modified by Cottone et al., and Ott have failed to teach calculating correction factors for each subpixel using software. Examiner cites Watanabe to teach calculating correction factors using software ***(Fig. 6, note ROM3)***. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the use of software to calculate correction factors as taught by Watanabe et al. in the visual display device taught by Greene et al., Cottone et al. and Ott so that the system may be more modifiable.

Response to Arguments

14. Applicant's arguments with respect to claims 1, 10 and 22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Examiner cites the following references as pertinent to the disclosure due to their relevance with calibrating visual displays.

Minato et al.	U.S. Patent 4,379,292
McManus et al.	U.S. Patent 4,875,032

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney Amadiz whose telephone number is (571) 272-7762. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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